Introductory Comments

Claims 1-35 are pending. Claims 6, 7, 9, 11, 13, 15, 17, 19, 21, and 23-35 have been withdrawn from consideration. Claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 were examined in the Office Action under reply and rejected as follows.

The Examiner has rejected claims 1, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, first paragraph, asserting that the specification does not reasonably provide written description for the claims.

The Examiner has rejected claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, first paragraph, asserting that the specification does not enable the claims.

The Examiner has rejected claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §102(b), asserting that the claims are anticipated by Husselstein *et al.* (1999) Plant Mol. Bio. **39**: 891-906.

The Examiner has objected to claims 1-5 for specifying DNA sequences by referring to Figures as opposed to sequence identifiers.

These objections and rejections are traversed and believed to be overcome for reasons discussed below.

Overview of the Amendments

Claims 1-5 have been amended to recite that the isolated polynucleotides comprise SEQ ID NO:20.

Claim 18 has been amended to recite that the polynucleotide comprising the nucleotide sequence depicted at positions 143 to 322, inclusive, of SEQ ID NO:20 or a polynucleotide comprising the nucleotide sequence depicted at positions 143 to 1552, inclusive, of SEQ ID NO:20 is introduced into a plant cell to produce a transformed plant cell. The amendment finds support in claim 18 as originally filed.

New claims 36-51 have been added. The claims pertain to recombinant vectors, host cells transformed with the recombinant vectors, transgenic plant comprising the

polynucleotides and methods of producing the transgenic plant. The new claims find support in the claims as originally filed.

New claims 52-55 pertaining to altered phenotypes have been added. The new claims find support throughout the specification, such as, for example, page 19, lines 9-20; page 23, lines 13-22; Examples 2 and 3, and Figure 7.

No new matter has been added by way of these amendments. In view of the foregoing amendments and following remarks, Applicants submit that the claims are in condition for allowance.

Addressing the Examiner's Rejections

1. Rejection of Claims 1, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, First Paragraph

The Examiner has rejected claims 1, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, first paragraph, asserting that the specification does not reasonably provide written description for the claims. The Examiner states that the structural features unique to the dwf7 mutant protein, the functional domains of the protein and the overall function of the protein has not been identified (Office Action, page 3, 2nd full paragraph). The Examiner concludes: "Since a *Arabidopsis dwf7* mutant protein has not been described by specific structural features or by specific function, the specification fails to provide an adequate written description to support the generic claims."

The applicants traverse. The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession of the claimed subject matter, and whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as

now claimed. See, e.g., Vas-Cath, Inc. v. Mahurkar, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991).

The independent claim 1 pertains to an isolated *dwf7* polynucleotide. The applicants have provided the sequence of the polynucleotide, identified as SEQ ID NO:20, in figures 8A-8D. The applicants have thus achieved more than a "wish" or a "plan" for obtaining the claimed isolated polynucleotide sequences as implied by the Examiner. The applicants have completely identified the polynucleotide sequences as evidenced by the figures and the sequence listings provided. In addition, the applicants have provided complete details about how the sequences were obtained and their approximate lengths an page 24, line 1 to page 25, line 27. The complete description of the sequence information thus allows one skilled in the art to visualize or recognize the identity of the claimed isolated polynucleotides. The applicants have thus met the written description requirement of 35 U.S.C. §112, First Paragraph. The Examiner is respectfully requested to withdraw the rejection.

Claim 8 pertains to a recombinant vector comprising the isolated *dwf7* polynucleotides and control elements. The written description requirement for the polynucleotides is met as discussed in detail above. The applicants, on page 26, line 1 to page 27, line 28 disclose and discuss the control elements for use with the isolated polynucleotides, and disclose the preparation of the recombinant vectors on page 31, line 1, to page 32, line 23. The applicants have thus met the written description requirement of 35 U.S.C. §112, First Paragraph for preparing recombinant vectors using the claimed isolated *dwf7* polynucleotides.

Claim 12 pertains to a method of producing a DWF7 polypeptide. The applicants teach the methods for producing DWF7 polypeptides on page 36, line 20 to page 37, line 8. The complete sequence of a representative DWF7 polypeptide is shown in Figure 9, and provided in the sequence listing as SEQ ID NO:21. The complete description of the polypeptide sequence information thus allows one skilled in the art to recognize the

identity of the claimed polynucleotides. The applicants have thus met the written description requirement of 35 U.S.C. §112, First Paragraph.

The independent claim 18 pertains to a method for altering the sterol composition of a plant by introducing the a polynucleotide comprising the nucleotide sequence depicted at positions 143 to 322, inclusive, of SEQ ID NO:20 or a polynucleotide comprising the nucleotide sequence depicted at positions 143 to 1552, inclusive, of SEQ ID NO:20 into a plant cell to produce a transformed plant cell. The applicants have provided the complete sequence of the polynucleotide identified as SEQ ID NO:20, thereby complying with the written description requirement. Further, the applicants disclose the methods for the production of transgenic plants on page 32, line 25 to page 36, line 18, and on page 23, line 15-22 discuss the altered sterol composition relative to wild-type plants.

The applicants submit that for the reasons discussed above, the specification complies with the requirements for written description, and the Examiner is respectfully requested to withdraw the rejection.

2. Rejection of Claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, First Paragraph

The Examiner has rejected claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. §112, first paragraph, asserting that the specification is not enabling for the claims. The Examiner acknowledges that the specification describes "the cloning and characterization of the nucleic acid sequence." (page 4, last paragraph of the Office Action). However, the Examiner has rejected all claims asserting that the specification does not teach transforming a plant "especially using a sequence with only 70% identity to Seq Id NO:20 or a fragment comprising at least 15 contiguous nucleotides of SEQ ID NO:20." (Office Action, Page 4).

The Examiner appears to have rejected the claims based on the recitation of 70% identity to SEQ ID NO:20. The Examiner asserts that applicants have not taught "how transforming a plant with the above mentioned sequences will produce a dominant phenotype or produce a plant with either increased or decreased levels of cholesterol relative to wild-type plants..." (Office Action, page 4). Claims 1-5 recite an isolated polynucleotide, claim 8 recites a recombinant vector, claim 10 recites a host cell transformed with the recombinant vector, and claim 12 recites a method of producing a DWF7 polypeptide. These claims do not pertain to transformed plants expressing a particular peptide, and therefore should not have been rejected. Further, the Examiner has acknowledged that the specification provides for the cloning and characterization of these nucleic acid sequences.

Claim 14 pertains to a transgenic plant while claim 16 pertains to a method of producing a transgenic plant. Neither of these claims recites the additional element of producing a particular phenotype, therefore should not have been subject to the rejection. Further, these claims are enabled by the specification. The test for enablement is "whether one skilled in the art could make or use the claimed invention from the disclosure in the patent coupled with information known in the art without undue experimentation." *United States v Telectronics, Inc.* 8 USPQ2d 1217 (Fed. Cir. 1988); *In re Wands,* 8 USPQ2d 1400 (Fed Cir. 1988). Thus, in order to satisfy Section 112 regarding enablement, the specification need only set forth such information as is sufficient to allow one of ordinary skill in the art to make and use the invention. The applicants teach how to produce the transgenic plants at page 32, line 25, to page 36, line 18 of the specification. The methods are then exemplified by the isolation of the *dwf7* mutants in Example 1, and by the morphological analysis of the *dwf7-1* mutants in Example 2. Further, in the Office Action, on page 3, first full paragraph, the Examiner notes that the applicants created 14,000 T-DNA transformed lines of *Arabidopsis* and characterized the phenotypes exhibited, which included short robust stems, reduced

fertility and dark-green, round, and curled leaves. The applicants have thus enabled what is claimed in claims 14 and 16.

Claim 18 has been amended to recite that the method entails the use of a polynucleotide comprising the nucleotide sequence depicted at positions 143 to 322, inclusive, of SEQ ID NO:20 or a polynucleotide comprising the nucleotide sequence depicted at positions 143 to 1552, inclusive, of SEQ ID NO:20. The claim as amended does not recited transforming with a mutant gene having 70% homology to SEQ ID NO:20.

Thus, in view of the teachings in the specification, undue experimentation would not be required to practice the invention of the present claims. The Examiner is respectfully requested to withdraw this rejection.

3. The Rejection of Claims 1-14 and 20-25 Under 35 U.S.C. §102(b)

The Examiner rejected claims 1-5, 8, 10, 12, 14, 16, 18, 20, and 22 as allegedly anticipated by Husselstein *et al.* (1999) Plant Mol. Bio. **39**: 891-906.

The applicants traverse. The application claims the benefit of U.S. Provisional Application Serial Nos. 60/179,901, filed on February 2, 2000. The publication date for Husselstein *et al.* is March 1999, as evidenced by the printout from the PubMed entry for the cited reference that is attached as Appendix C. The reference thus does not meet the requirements for a 102(b) rejection. Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §102(b).

Moreover, the applicants are submitting a Declaration of Inventors with this response. The declaration is pursuant to 37 C.F.R. 1.131, and establishes that the inventors were in possession of the invention prior to the publication of the Husselstein *et al.* The claims, therefore, cannot be rejected under 35 U.S.C. §102(a) as anticipated by Husselstein *et al.*

Conclusion

Applicants respectfully submit that the claims define an invention which complies with the requirements of 35 U.S.C. §112., and is novel over the art. Accordingly, a Notice of Allowance is believed in order and is respectfully requested.

If the Examiner notes any further matters which the Examiner believes may be expedited by a telephone interview, the Examiner is requested to contact the undersigned.

Respectfully submitted,

Date: July 24/2002

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